

Claims:

*Sub A1* 1. In an optical communication network comprising an optical transmission and reception links extending between first and second locations and carrying traffic in normal operation mode from the first location to the second location and protection transmission and reception links for carrying the traffic of the optical transmission and reception links in the event of a fault in at least one of the optical links, a method for managing routing of traffic to the protection links, which method comprises the steps of:

10 detecting a fault on an optical link at the second location;

determining whether the total energy received over the reception optical link at the second location exceeds a pre-defined threshold;

20 in the case that the total energy thus received does not exceed the pre-defined threshold, switching at the second location the traffic transmission and reception to the corresponding protection links;

detecting a fault on an optical link at the first location;

25 determining whether the total energy received at the first location over the receiving optical link exceeds the pre-defined threshold; and

30 in the case that the total energy thus received at the first location does not exceed the pre-defined threshold, switching at the first location the traffic transmission and reception to the corresponding protection links.

35 2. In an optical communication network comprising a plurality of telecommunication channels extending between first and second locations, the channels comprising a plurality of channels for carrying traffic

in normal operation mode from the first location to the second location and at least one protection channel for carrying traffic channel in the event of a fault in at least one of the channels carrying traffic in normal 5 operation mode, a method for managing routing of traffic to the protection channel, comprising the steps of:

detecting a fault on at least one of the channels carrying traffic in normal operation mode, at the second location;

10 switching at the second location the transmission and reception paths associated with said at least one failing channel to the at least one protection channel;

detecting a fault on said at least one channel at the first location; and

15 switching at the first location the transmission and reception paths associated with said at least one failing channel to the at least one protection channel.

20 3. A method according to Claim 2, wherein said at least one protection channel is used for protecting at least one pre-designated channel out of the plurality of telecommunication channels.

25 4. A method according to Claim 2, wherein said at least one protection channel is used for protecting a plurality of telecommunication channels.

5. In an optical communication network comprising a plurality of telecommunication channels extending between first and second locations, the channels comprising a plurality of channels for carrying traffic from the first location to the second location, at least one protection channel for carrying the traffic of at least one forward 30 channel in the event of fault in said at least one forward channel, a method for allowing continuous operation of non-failing channels provided that the

Overall transmitted energy in the non-failing channels  
~~exceeds a pre-defined threshold.~~

*Sub A27*

6. An optical communication network comprising a plurality of telecommunication channels extending between first and second locations, the channels comprising a plurality of forward channels for carrying traffic in normal operating mode from the first location to the second location, at least one protection link for carrying the traffic of at least one forward channel in the event of fault in said at least one forward channel, wherein when a failure occurs in one or more of said telecommunication channels, a continued operation of the non-failing telecommunication channels is allowed, provided that the overall transmitted energy in said non-failing telecommunication channels exceeds a pre-defined threshold.

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~~D. An optical communication network, comprising:~~

20        a wave division multiplexer receiving outputs from said plurality of optical transmitters over a plurality of optical channels;  
              at least one pair of optical links comprising a transmission link and a reception link;  
25        at least one pair of protection links comprising a transmission link and a reception link;  
              at least one protection link;  
              a wave division demultiplexer capable of receiving an input from said division multiplexer over one of said transmission links;  
              a plurality of optical receivers, each receiving an input from said wave division demultiplexer;  
              a detection means for detecting a loss of signal in at least one failing channel out of the plurality of 35 optical channels;

a determination means for determining whether the energy of the input received from said division multiplexer exceeds a pre-defined threshold;

5 a blocking means operative to block all laser beams leaving said wave division multiplexer responsive to a determination of said determination means that the energy thus received does not exceed the pre-defined threshold; and

10 a protecting means operative to divert communication traffic from said at least one failing channel to said at least one protection link in the event of fault in said at least one forward channel, provided that the energy of the input received from said division multiplexer exceeds the pre-defined threshold.

15 *Sub A3* 8. An optical communication network according to Claim 6, further comprising means adapted to monitor the operability of the protection link during normal operation mode of the network.

20 9. An optical communication network according to Claim 7, further comprising at least one transmitter and at least one receiver, operative in monitoring the operability of an optical link not being currently used 25 for transmission of communication traffic.

10. A method according to Claim 1, further comprising monitoring the operability of the protection link when said protection link is not used for 30 transmission of traffic during normal operation mode.